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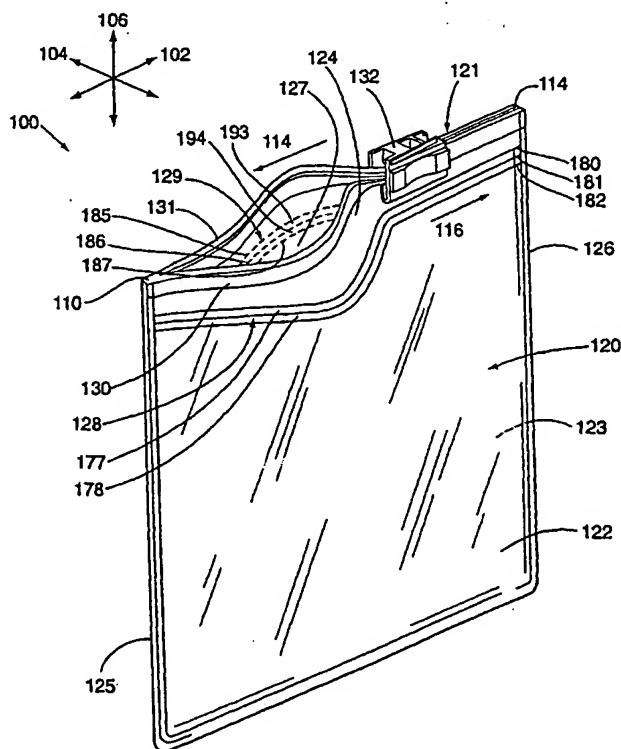
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(54) Title: CONTAINER WITH CLOSURE DEVICE AND GRIPPING SURFACE



(57) Abstract: A container (100) includes a closure device (121) and a gripping surface (128). The closure device includes interlocking fastening strips (130, 131) and a slider (132) slidably disposed on the fastening strips for facilitating the occlusion and deocclusion of the fastening strips. The gripping surface (128) is provided for facilitating the opening and closing of the closure device (121) and for facilitating the storage and retrieval of matter inside the container (100). The gripping surface (128) includes an upper surface (149) and a lower surface (150). The gripping surface (128) may have several different configurations. The gripping surface (128) may be formed by adding material to the sidewall (122), by removing material from the sidewall (122) or by manipulating the sidewall (122).

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CONTAINER WITH CLOSURE DEVICE AND GRIPPING SURFACEFIELD OF THE INVENTION

5           The present invention relates generally to containers  
and, more particularly, to a gripping surface used with a  
closure device. The invention is particularly well suited  
for use on flexible storage containers, including plastic  
10 bags.

BACKGROUND OF THE INVENTION

          The use of closure devices for fastening storage  
containers, including plastic bags, is generally known.  
15 Furthermore, the manufacture of closure devices made of  
plastic materials is generally known to those skilled in the  
art, as demonstrated by the numerous patents in this area.

          A particularly well-known use for closure devices is in  
20 connection with flexible storage containers, such as plastic  
bags. In some instances, the closure device and the  
associated container are formed from thermoplastic materials,  
and the closure device and the sidewalls of the container are  
integrally formed by extrusion as a single piece.  
25 Alternatively, the closure device and sidewalls of the  
container may be formed as separate pieces and then connected  
by heat sealing or any other suitable connecting process. In  
either event, such closure devices are particularly useful in  
providing a closure means for retaining matter within the  
30 bag.

          Conventional closure devices typically utilize mating  
fastening strips or closure elements which are used to  
selectively seal the bag. With such closure devices,

however, it is often difficult to determine whether the fastening strips are fully occluded. This problem is particularly acute when the strips are relatively narrow. Accordingly, when such fastening strips are employed, there  
5 exists a reasonable likelihood that the closure device is at least partially open.

Such fastening strips devices are also particularly difficult to handle by individuals with limited manual  
10 dexterity. Thus, in order to assist these individuals and for ease of use by individuals with normal dexterity, the prior art has also provided sliders for use in opening and closing the fastening strips, as disclosed, for example, in U.S. Patent Nos. 4,199,845, 5,007,142, 5,007,143, 5,010,627,  
15 5,020,194, 5,070,583, 5,283,932, 5,301,394, 5,426,830, 5,431,760, 5,442,838, and 5,448,808. Some of these sliders include a separator which extends at least partially between the fastening strips. When the slider is moved in the appropriate direction, the separator divides the fastening  
20 strips and opens the bag.

A plastic bag which has first and second fastening strips and a knurled surface has been sold by First Brands Corporation under the trademark Glad®. A first knurled  
25 surface is located on the outside surface of a first sidewall of the bag. In addition, the first knurled surface is located above a first fastening strip. A second knurled surface is located on the outside surface of the first sidewall. In addition, the second knurled surface is located  
30 below the first fastening strip. A third knurled surface is located on the outside surface of a second sidewall of the bag. In addition, the third knurled surface is located above a second fastening strip. A fourth knurled surface is located on the outside surface of the second sidewall. The

fourth knurled surface is located below the second fastening strip. In addition, a first rib of a first color is located above the first fastening strip. The first rib is located on the inside surface of the first sidewall. A second and third  
5 rib of a second color are located above the second fastening strip. The second and third rib are located on the inside surface of the second sidewall. The bag does not have and does not use a slider.

10 Another plastic bag which has first and second fastening strips and ribs has been sold by Dow under the trademark Ziploc®. Five ribs are located on the inside surface of a first sidewall of the bag. The five ribs are located above the first fastening strip. Seven ribs are  
15 located on the inside surface of a second sidewall of the bag. The seven ribs are located above the first fastening strip. The bag does not have and does not use a slider.

The prior art has failed to provide a slider in  
20 combination with a gripping surface. Moving the slider is a two hand operation with one hand moving the slider and the other hand holding the bag. If the fingers of the user are slippery due to handling various items, the fingers will slip along the bag. Similarly, even if the user's fingers are  
25 clean, the fingers may slip along the bag.

In addition, when a user seeks to store matter inside the bag or retrieve stored matter from the plastic bag after the fastening strips have been deoccluded, the user may need  
30 a gripping area to hold the bag.

#### SUMMARY OF THE INVENTION

According to the teachings of the present invention, the container includes a bag, a closure device and a gripping

surface. The bag includes a pair of complementary sheets or opposing flexible sidewalls, such as a plastic bag. The closure device includes interlocking fastening strips disposed along respective edge portions of the opposing sidewalls, and a slider slidably disposed on the interlocking fastening strips for facilitating the occlusion and deocclusion of the fastening strips when moved towards first and second ends of the fastening strips. The gripping surface is located on the sidewall of the bag below the fastening strips. The gripping surface includes an upper surface and a lower surface. The gripping surface is provided to assist the user in the opening and closing of the closure device and/or to facilitate the storage and retrieval of matter inside the bag.

These and other objects, features, and advantages of the present invention will become more readily apparent upon reading the following detailed description of exemplified embodiments and upon reference to the accompanying drawings herein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a container according to the present invention in the form of a plastic bag;

25

Fig. 2 is a front view of the container in Fig. 1;

Fig. 3 is a cross-sectional view taken along line 3-3 in Fig. 2;

30

Fig. 4 is a front view of another embodiment of the container;



Fig. 5 is a cross-sectional view taken along line 5-5 in Fig. 4;

Fig. 6 is a front view of another embodiment of the container;

Fig. 7 is a cross-sectional view taken along line 7-7 in Fig. 6;

Fig. 8 is a front view of another embodiment of the container;

Fig. 9 is a cross-sectional view taken along line 9-9 in Fig. 8;

Fig. 10 is a front view of another embodiment of the container;

Fig. 11 is a cross-sectional view taken along line 11-11 in Fig. 10;

Fig. 12 is front view of another embodiment of the container;

Fig. 13 is a cross-sectional view taken along line 13-13 of Fig. 12;

Fig. 14 is a cross-sectional view of fastening strips;

Fig. 15 is a cross-sectional view of fastening strips showing another embodiment of attaching the sidewalls to the fastening strips;

Fig. 16 is a cross-sectional view of fastening strips and a slider;

5 Fig. 17 is a cross-sectional view of fastening strips and a slider;

10 Fig. 18 is a rear view of another embodiment of a slider and cross-sectional view of another embodiment of fastening strips;

Fig. 19 is a rear view of another embodiment of a slider and cross-sectional view of another embodiment of fastening strips; and

15 Fig. 20 is a rear view of another embodiment of a slider and cross-sectional view of another embodiment of fastening strips.

20 While the present invention will be described and disclosed in connection with certain embodiments and procedures, the intent is not to limit the present invention to these embodiments and procedures. On the contrary, the intent is to cover all such alternatives, modifications, and equivalents that fall within the spirit and scope of the  
25 present invention as defined by the appended claims.

#### DESCRIPTION OF THE EMBODIMENTS

30 Fig. 1 illustrates an embodiment of a container 100 in the form of a plastic bag 120 having a sealable closure device 121, a first gripping surface 128 and a second gripping surface 129.

The bag 120 includes a top end 124, a first sidewall 122 and a second sidewall 123 joined at seams 125, 126 to

define a compartment 127 accessible through the open top end 124 but sealable by means of the closure device 121.

5 The closure device 121 includes first and second fastening strips 130, 131 and a slider 132. The fastening strips 130, 131 and the slider 132 have a longitudinal X axis 102, a transverse Y axis 104 and a vertical Z axis 106. The transverse Y axis 104 is perpendicular to the longitudinal X axis 102. The vertical Z axis 106 is  
10 perpendicular to the longitudinal X axis 102 and the vertical Z axis 106 is perpendicular to the transverse Y axis 104.

The first fastening strip 130 is attached to the first  
15 sidewall 122 near the top end 124 of the bag 120. The second fastening strip 131 is attached to the second sidewall 123 near the top end 124 of the bag 120. The fastening strips 130, 131 are located across from and substantially parallel to each other and are configured to  
20 allow the fastening strips 130, 131 to be able to interlock. The slider 132 is mounted onto the fastening strips 130, 131 so that the slider 132 is restrained from being removed from the fastening strips 130, 131 but free to slide along the X axis 102. The slider 132 engages the fastening strips 130,  
25 131 so that when the slider 132 moves in an occlusion direction 114, the fastening strips 130, 131 interlock and the bag 120 is sealed, and when the slider 132 moves in a deocclusion direction 116, the fastening strips 130, 131 separate and the bag 120 is open.

30

The gripping surfaces 128, 129 provide points of contact for the user's fingers and thumbs which increase the ability of the user to grip the bag 120 and to hold it steady. In addition the gripping surfaces 128, 129 provide

conveniently located points of contact where a user can place his or her fingers when sliding the slider 132 to occlude or deocclude the fastening strips 130, 131 or when keeping the sidewalls 122, 123 apart after the closure device 121 is open  
5 to store or retrieve matter from the compartment 127 of the bag 120.

Figs. 1, 2 and 3 illustrate an embodiment of the container 100 which uses a first gripping surface 128 and a  
10 second gripping surface 129. Referring to Fig. 1, the gripping surfaces 128, 129 assist the user when opening and closing the closure device 121 and when accessing the compartment 127. The first gripping surface 128 is located below the first fastening strip 130 and is attached to, or  
15 integral with, the first sidewall 122.

Referring to Fig. 3, the first gripping surface 128 includes a first upper surface 149 and a first lower surface 150. The upper surface 149 is configured so that it will  
20 provide a grippable surface for the user's fingers and thumbs that resists slippage. The upper surface 149 is attached to or integral with the lower surface 150. The lower surface 150 is either attached to or integral with the first sidewall 122 of the bag.

25 In the embodiment shown in Fig. 3, the upper surface 149 includes a first rib 180, a second rib 181 and a third rib 182. The ribs 180, 181, 182 are substantially parallel to each other and extend from seam 125 to seam 126 along the  
30 sidewall 122. The lower surface 150 includes a first trough 177 and a second trough 178. The troughs 177, 178 are located between the ribs 180, 181, 182. Specifically, the first trough 177 is located between the first rib 180 and the

second rib 181. The second trough 178 is located between the second rib 181 and the third rib 182.

Correspondingly, the second gripping surface 129 is located below the second fastening strip 131 and is attached to, or integral with, the second sidewall 123. The second gripping surface 129 includes a second upper surface 151 and a second lower surface 152. The second upper surface 151 includes a first rib 185, a second rib 186 and a third rib 187. The second lower surface 152 includes a first trough 193 and second trough 194. The ribs 185, 186, 187 and trough 193, 194 are similar to those found on the first gripping surface 128 in shape and location.

Figs. 4 and 5 depict another embodiment of the container 300 and illustrate a first gripping surface 228 and a second gripping surface 229. The container 200 includes a first fastening strip 230, a second fastening strip 231 and a slider 232. Fig. 5 illustrates the location of the gripping surfaces 228, 229 on both sidewalls 222, 223 of the container 200. The first gripping surface 228 includes an upper surface 249 and a lower surface 250. The upper surface 249 includes a first rib 280 and a second rib 281. The lower surface 250 includes a first trough 277. The second gripping surface 229 includes an upper surface 251 and a lower surface 252. The upper surface 251 includes a first rib 285 and a second rib 286. The lower surface 250 includes a first trough 293. The height 297 of the second gripping surface 229 along the Z axis 106 is larger than the height 296 of the first gripping surface 228.

Figs. 6 and 7 depict another embodiment of a container 300 and illustrate a first gripping surface 328 and a second gripping surface 329. The container 300 also includes a

first fastening strip 330, a second fastening strip 331 and a slider 332. Fig. 7 illustrates the location of the gripping surfaces 328, 329 on both sidewalls 322, 323 of the container 300. Fig. 7 also shows that the height of the troughs along the Z axis 106 between adjacent ribs can vary and the number of ribs on each gripping surface can be different. In Fig. 7, the first gripping surface 328 includes an upper surface 349 and a lower surface 350. The upper surface 349 includes a first rib 380, a second rib 381, a third rib 382 and a fourth rib 383. The lower surface includes a first trough 377, a second trough 378, and a third trough 379. The height 361 of the second trough 378, is different than the height 360 of the first trough 379 and the height 362 of the third trough 379. The height of the troughs can also vary so that no two troughs are the same height. The second gripping surface includes an upper surface 351 and a lower surface 352. The upper surface 351 includes a first rib 385, a second rib 386 and a third rib 387. The lower surface 352 includes a first trough 393 and a second trough 394. The height 363, 364 of troughs 393, 394 is greater than the height 360, 362 of troughs 377, 379. In addition, the length 366 of rib 386 is greater than the length 365, 367 of ribs 385, 387.

Figs. 8 and 9 depict another embodiment of the container 400 and illustrate a first gripping surface 428 and a second gripping surface 429. The container 400 includes a first fastening strip 430, a second fastening strip 431 and a slider 432. Fig. 8 shows that the first gripping surface is a continuous band 440 having a dotted texture. Fig. 9 illustrates the location of the gripping surfaces 428, 429 on the sidewalls 422, 423 of the container 400. Fig. 9 also shows that the gripping surface can be applied to the sidewall or can be integral with the sidewall. The first

gripping surface 428 includes an upper surface 449 and a lower surface 450. The upper surface 449 includes a plurality of raised dots or protrusions 480, 481, 482, 483, 484, 485. The lower surface 450 includes valleys 475, 476, 477, 478, 479 between the protrusions. The first gripping surface 428 is applied to the first sidewall 422 of the container 400. The second gripping surface 429 has an upper surface 451 and lower surface 452. The upper surface 451 includes a plurality of raised dots or semicircular protrusions 486, 487, 488, 489, 490, 491. The lower surface 452 includes valleys 492, 493, 494, 495, 496 between the protrusions. The upper surface 451 and the lower surface 452 of the second gripping surface 429 are integral to the second sidewall 423 of the container 400. The upper and lower surfaces could be formed by embossing or removing material as described more fully herein.

Figs. 10 and 11 depict another embodiment of the container 500 and illustrate a first gripping surface 528 and a second gripping surface 529. The container 500 includes a first fastening strip 530, a second fastening strip 531 and a slider 532. Fig. 10 shows that the first gripping surface is a continuous band 540 having a mesh texture. As shown in Fig. 10, the gripping surfaces 528, 529 are wider at the ends near the seams 525, 526 than at the center. In other embodiments, the width of the gripping surfaces may vary along the length. Fig. 11 illustrates the location of the gripping surfaces 528, 529 on the sidewalls 522, 523 of the container 500. Fig. 11 also shows that the gripping surface can be partially integral with the sidewall. The first gripping surface 528 includes an upper surface 549 and lower surface 550. The upper surface 549 includes ribs 580, 581, 582, 583, 584, 585 and cross ribs, such as, rib 586. The lower surface 550 includes valleys between the ribs, such as,

valleys 575, 576, 577, 578, 579. The first gripping surface 528 is applied to the first sidewall 522 of the bag 520. The second gripping surface 529 includes a second upper surface 551 and a second lower surface 552. The upper surface 551 includes ribs 587, 588, 589, 590, 591, 592 and cross ribs, such as, rib 593. The lower surface 552 includes valleys between the ribs, such as, valleys 593, 594, 595, 596, 597. The upper surface 551 is applied and attached to the lower surface 552. In this embodiment, the lower surface 552 is the second sidewall 523 of the container 500.

In another embodiment, the first gripping surface and the second gripping surface would only have vertical ribs, such as, cross ribs 586, 593 as shown in Figs. 10 and 11. Thus, the first and second gripping surfaces would be a plurality of vertical ribs. In yet another embodiment, the first and second gripping surfaces would have a plurality of angled ribs which are at an angle to the Z axis 106. The vertical ribs or angled ribs may extend from seam 525 to seam 526 or the ribs may only be at selected locations as discussed with respect to Fig. 12.

Figs. 12 and 13 depict another embodiment of the container 600 and illustrate a first gripping surface 628 and a second gripping surface 629. The container 600 includes a first fastening strip 630, a second fastening strip 631 and a slider 632. Fig. 12 shows that the first gripping surface 628 is a plurality of segments 643, 644. The segments 643, 644 both have a diamond-shaped knurled texture. The segments 643, 644 are shown near the seams 625, 626 of the plastic bag 620 but can be found anywhere on the bag 620 and need only be placed where the user would be able to grip them when using the container 600. Fig. 13 illustrates the location of the gripping surfaces 628, 629 on the sidewalls 622, 623 of the



container 600. The gripping surfaces can be: (1) applied to the sidewall; (2) partially integral with the sidewall; or (3) integral with the sidewall. In this embodiment, the gripping surface 628 is integral with the sidewall 622 and was formed by embossing the sidewall 622. The gripping surface 629 is applied and attached to the sidewall 623. The first gripping surface 628 includes an upper surface 649 and a lower surface 650. The second gripping surface 650 includes an upper surface 651 and a lower surface 652.

In these embodiments, the texture used to form the gripping surface can be any of the ones described above or any other texture that one skilled in the art would recognize as being capable of providing a gripping surface.

The gripping surface can be manufactured in a number of ways by adding, removing or manipulating material to create a gripping surface. For instance, the gripping surface could be made by adding a separate layer or layers of material to the sidewall.

Also, the gripping surface could be made by removing material. For example, the gripping surface could be made by etching the sidewall (or by etching a layer of material applied to the sidewall) with an acid in order to remove material from the sidewall (or layer of material) in a predetermined pattern or in a random pattern. As another example, the gripping surface could be made by using a tool to remove material from the sidewall or to remove material from a layer applied to the sidewall.

In addition, the gripping surface could be made by manipulating material. For example, the gripping surface could be made by embossing the sidewall in order to

manipulate the material comprising the sidewall to form a gripping surface with a predetermined pattern or a random pattern. Specifically, portions of the material are displaced to form upper surfaces and lower surfaces.

5

The upper and lower surfaces of the gripping surface can be either integral with or applied to the sidewall of the bag. For example, the gripping surface (including the upper and lower surfaces) can be applied and attached to the sidewall of the bag. In another example, the gripping surface (including the upper and lower surfaces) can be integral with the sidewall of the bag, such as, by removing or manipulating the sidewall material. In a third example, the upper surface of the gripping surface can be applied to the sidewall of the bag and the lower surface of the gripping surface can be the sidewall of the bag.

In keeping with a general aspect of the present invention and as will be described in greater detail below, the interlocking fastening strips of the present invention may be of virtually any type or form including, for example: (1) U-channel fastening strips as best shown herein at Figs. 14 and 15; (2) "arrowhead-type" fastening strips, as disclosed in U.S. Patent Nos. 5,007,142 and 5,020,194, and as shown herein at Fig. 18; and/or (3) "profile" fastening strips, as disclosed in U.S. Patent No. 5,664,299 and as shown herein at Fig. 19. All of the above-identified patents and applications are hereby incorporated by reference in their entireties.

30

An illustrative example of the type of closure device that may be used with the present invention is shown in Fig. 14. The fastening strips include a first fastening strip 130 with a first closure element 136 and a second fastening strip

131 with a second closure element 134. The first closure element 136 engages the second closure element 134. The first fastening strip 130 may include a flange 163 disposed at the upper end of the first fastening strip 130 and an outer offset 167 and an inner offset 169, each disposed at the lower end of the first fastening strip 130. Likewise, the second fastening strip 131 may include a flange 153 disposed at the upper end of the second fastening strip 131 and an outer offset 157 and an inner offset 159, each disposed at the lower end of the second fastening strip 131. The flanges 163, 153 include a straight portion 166, 156 and an angled portion 168, 158. The angled portion 168, 158 is at an approximately 120 degree angle to the straight portion 166, 156. The sidewalls 122, 123 of the plastic bag 120 may be attached to the inner offsets 159, 169 of their respective fastening strips 130, 131 by conventional manufacturing techniques. As shown in Fig. 15, the sidewalls 122, 123 of the bag 120 may also be attached to the outside surfaces of their respective fastening strips 130, 131, where the outside surfaces comprise the outer offsets 157, 167 and the base portions 138, 148.

The second closure element 134 includes a base portion 138 having a pair of spaced-apart parallelly disposed webs 140, 141, extending from the base portion 138. The webs 140, 141 include hook closure portions 142, 144 extending from the webs 140, 141 respectively, and facing towards each other. The hook closure portions 142, 144 include guide surfaces 146, 147 which serve to guide the hook closure portions 142, 144 for occluding with the hook closure portions 152, 154 of the first closure element 136.

The first closure element 136 includes a base portion 148 including a pair of spaced-apart, parallelly disposed webs

150, 151 extending from the base portion 148. The webs 150, 151 include hook closure portions 152, 154 extending from the webs 150, 151 respectively and facing away from each other. The hook closure portions 152, 154 include guide surfaces  
5 145, 155, which generally serve to guide the hook closure portions 152, 154 for occlusion with the hook closure portions 142, 144 of the second closure element 134. The guide surfaces 145, 155 may also have a rounded crown surface. In addition, the hook closure portions 144, 154 may  
10 be designed so that the hook closure portions 144, 154 adjacent the interior of the container provide a greater resistance to opening the closure device 121.

The second fastening strip 131 may or may not include a  
15 color enhancement member 135 which is described in U.S. Patent 4,829,641 and which is incorporated by reference.

The slider 132 facilitates the occlusion and deocclusion of the interlocking fastening strips 130, 131  
20 when moved in the appropriate direction along the longitudinal X axis 102 of the fastening strips 130, 131.

An illustrative example of the type of slider 132 that may be used with the present invention is shown in Figs. 16 and 17. The slider 132 includes a separator 172. The  
25 separator acts as a wedge to separate the fastening strips 130, 131.

Figs. 18-20 illustrate interlocking fastening strips of  
30 different configurations and the corresponding slider design. As shown in Fig. 18, the interlocking fastening strips may alternatively comprise "arrowhead-type" closure strips. As described more fully in U.S. Patents 5,007,142 and 5,020,194, "arrowhead-type" closure strips typically include a first

fastening strip 730 with an engagement portion 736, and an associated second fastening strip 731 with an engagement portion 737. In use, the first fastening strip 730 and the second fastening strip 731 are selectively occluded and  
5 deoccluded by moving the slider 732 in the appropriate direction.

Additionally, the interlocking fastening strips may comprise "profile" closure strips, as shown in Fig. 19. As  
10 described more fully in U.S. Patents 5,664,299, "profile" closure strips typically include a first fastening strip 830 and a second fastening strip 831. The first and second fastening strips 830 and 831 are selectively coupled and decoupled by moving the slider member 832 in the appropriate  
15 direction.

Also, the interlocking fastening strips may be "rolling action" fastening strips 930, 931 as shown in Fig. 20 and described in U.S. Patent 5,007,143.

20 Although several interlocking fastening strip embodiments have been specifically described and illustrated herein, it will be readily appreciated by those skilled in the art that other kinds, types, or forms of fastening strips  
25 may alternatively be used without departing from the scope or spirit of the present invention.

The interlocking fastening strips may be manufactured by extrusion through a die. In addition, the fastening strips  
30 should be manufactured to have approximately uniform cross-sections. This not only simplifies the manufacturing of a fastening strips, but also contributes to the physical flexibility of the fastening strips.

Generally, the interlocking fastening strips may be formed from any suitable thermoplastic material including, for example, polyethylene, polypropylene, nylon, or the like, or from a combination thereof. Thus, resins or mixtures of  
5 resins such as high density polyethylene, medium density polyethylene, and low density polyethylene may be employed to prepare the interlocking fastening strips. In most instances, the fastening strips are made from low density polyethylene. The selection of the appropriate thermoplastic  
10 material, however, is related to the particular design of the fastening strips, the Young's Modulus of the thermoplastic material, and the desired elasticity and flexibility of the strips.

15 When the fastening strips are used in a sealable bag, the fastening strips and the films that form the body of the bag may be conveniently manufactured from heat sealable material. In this way, the bag may be economically formed by using an aforementioned thermoplastic material and by heat  
20 sealing the fastening strips to the bag. In most instances, the bag is made from a mixture of high pressure, low density polyethylene and linear, low density polyethylene.

The fastening strips may be manufactured by extrusion  
25 or other known methods. For example, the closure device may be manufactured as individual fastening strips for later attachment to the bag or may be manufactured integrally with the bag. In addition, the fastening strips may be manufactured with or without flange portions on one or both  
30 of the fastening strips depending upon the intended use of the fastening strips or expected additional manufacturing operations.

Generally, the fastening strips can be manufactured in a variety of forms to suit the intended use. The fastening strips may be integrally formed on the opposing sidewalls of the container or bag, or connected to the container by the use of any of many known methods. For example, a thermoelectric device may be applied to a film in contact with the flange portion of the fastening strips or the thermoelectric device may be applied to a film in contact with the base portion of fastening strips having no flange portion, to cause a transfer of heat through the film to produce melting at the interface of the film and a flange portion or base portion of the fastening strips. Suitable thermoelectric devices include heated rotary discs, traveling heater bands, resistance-heated slide wires, and the like. The connection between the film and the fastening strips may also be established by the use of hot melt adhesives, hot jets of air to the interface, ultrasonic heating, or other known methods. The bonding of the fastening strips to the film stock may be carried out either before or after the film is U-folded to form the bag. In any event, such bonding is done prior to side sealing the bag at the edges by conventional thermal cutting. In addition, the first and second fastening strips may be positioned on opposite sides of the film. Such an embodiment would be suited for wrapping an object or a collection of objects such as wires. The first and second fastening strips should usually be positioned on the film in a generally parallel relationship with respect to each other, although this will depend on the intended use.

30

The slider may be multiple parts and snapped together. In addition, the slider may be made from multiple parts and fused or welded together. The slider may also be a one piece construction. The slider can be colored, opaque, translucent

or transparent. The slider may be injection molded or made by any other method. The slider may be molded from any suitable plastic material, such as, nylon, polypropylene, polystyrene, acetal, toughened acetal, polyketone, 5 polybutylene terephthalate, high density polyethylene, polycarbonate or ABS (acrylonitrile-butadiene-styrene).

From the foregoing it will be understood that modifications and variations may be effectuated to the 10 disclosed structures - particularly in light of the foregoing teachings - without departing from the scope or spirit of the present invention. As such, no limitation with respect to the specific embodiments described and illustrated herein is intended or should be inferred. Indeed, the following claims 15 are intended to cover all modifications and variations that fall within the scope and spirit of the present invention. In addition, all references and copending applications cited herein are hereby incorporated by reference in their entireties.



WHAT IS CLAIMED IS:

1. A container comprising:
  - 5 a first sidewall and a second sidewall, said first sidewall includes a first fastening strip, said second sidewall includes a second fastening strip,  
a slider adapted to be slidably disposed on said fastening strips and facilitating the occlusion of said fastening strips when moved towards a first end thereof and facilitating the deocclusion of said fastening strips when moved towards a second end thereof;
  - 10 a first gripping surface located on the first sidewall below the first fastening strip,
  - 15 said container having a longitudinal X axis and a transverse Y axis, said transverse Y axis being perpendicular to said longitudinal X axis, said container having a vertical Z axis, said vertical Z axis being perpendicular to said longitudinal X axis, said vertical Z axis being perpendicular to said transverse Y axis.
  - 20
2. The invention as in claim 1 wherein said first gripping surface has a first upper surface and a first lower surface.
- 25 3. The invention as in claim 2 wherein the first upper surface includes a first rib.
4. The invention as in claim 3 wherein the first upper surface includes a second rib.
- 30 5. The invention as in claim 2 further comprising a second gripping surface located on the second sidewall below

the second fastening strip, said second gripping surface has a second upper surface and a second lower surface.

6. The invention as in claim 5 wherein the second  
5 upper surface includes a first rib.

7. The invention as in claim 6 wherein the second upper surface includes a second rib.

10 8. The invention as in claim 5 wherein said first upper surface includes a first rib and a second rib, said second upper surface includes third rib and a fourth rib.

15 9. The invention as in claim 8 wherein the distance between the first rib and the second rib is equal to the distance between the third rib and the fourth rib.

20 10. The invention as in claim 8 wherein the distance between the first rib and the second rib is greater than the distance between the third rib and the fourth rib.

11. The invention as in claim 4 wherein the length of the first rib is equal to the length of the second rib.

25 12. The invention as in claim 4 wherein the length of the first rib is greater than the length of the second rib.

13. The invention as in claim 4 wherein the first upper surface includes a third rib.

30

14. The invention as in claim 13 wherein the distance between the first rib and the second rib is equal to the distance between the second rib and the third rib.

15. The invention as in claim 13 wherein the distance between the first rib and the second rib is greater than the distance between the second rib and the third rib.

5 16. The invention as in claim 2 wherein the first upper surface includes a plurality of protrusions.

10 17. The invention as in claim 2 wherein the upper surface includes a mesh pattern which has a plurality of ribs and cross-ribs.

18. The invention as in claim 2 wherein the upper surface is a knurled pattern.

15 19. The invention as in claim 1 wherein the width of the gripping surface varies along the length of the sidewall.

20 20. The invention as in claim 19 wherein the gripping surface has ends and a center, the width of the gripping surface at the ends is wider than the width of the gripping surface at the center.

25 21. The invention as in claim 1 wherein the first gripping surface has a first segment and a second segment.

30 22. The invention as in claim 21 wherein the container has a first edge and a second edge which join the first and second sidewalls, the first segment is located near the first edge and the second segment is located near the second edge.

23. The invention as in claim 2 wherein the first gripping surface includes a layer of material added to the first sidewall.

5        24. The invention as in claim 23 wherein the layer of material includes the first upper surface and the first lower surface.

10       25. The invention as in claim 23 wherein the layer of material includes the first upper surface and a portion of the sidewall includes the first lower surface.

15       26. The invention as in claim 2 wherein the first gripping surface is formed by removing material from the first sidewall.

20       27. The invention as in claim 26 wherein the first lower surface is formed by removing material from the first sidewall.

28. The invention as in claim 27 wherein the first upper surface is formed by removing material from the first sidewall.

25       29. The invention as in claim 26 wherein the material is removed by one of the following processes: cutting or etching.

30       30. The invention as in claim 2 wherein the first gripping surface is formed by manipulating the first sidewall.

31. The invention as in claim 30 wherein the first lower surface is formed by manipulating the first sidewall.

32. The invention as in claim 31 wherein the first upper surface is formed by manipulating the first sidewall.

5 33. The invention as in claim 30 wherein the first sidewall is manipulated by an embossing process.

34. The invention as in claim 1 wherein said fastening strips comprise U-channel type fastening strips.

10 35. The invention as in claim 1 wherein said fastening strips comprise arrowhead type fastening strips.

36. The invention as in claim 1 wherein said fastening  
15 strips comprise profile type fastening strips.

37. The invention as in claim 1 wherein said fastening strips comprise rolling action type fastening strips.

20 38. A method of manufacturing a container comprising:  
providing a first sidewall and a second sidewall, said first sidewall includes a first fastening strip, said second sidewall includes a second fastening strip,

25 providing a slider adapted to be slidably disposed on said fastening strips and facilitating the occlusion of said fastening strips when moved towards a first end thereof and facilitating the deocclusion of said fastening strips when moved towards a second end thereof;

30 providing a first gripping surface located on the first sidewall below the first fastening strip, said container having a longitudinal X axis and a transverse Y axis, said transverse Y axis being perpendicular to said longitudinal X axis, said container having a vertical Z axis, said vertical Z axis being perpendicular to said longitudinal X axis, said

vertical Z axis being perpendicular to said transverse Y axis.

39. The invention as in claim 38 wherein said first  
5 gripping surface has a first upper surface and a first lower surface.

40. The invention as in claim 39 wherein the first  
10 upper surface includes a first rib.

41. The invention as in claim 40 wherein the first  
upper surface includes a second rib.

42. The invention as in claim 39 further comprising a  
15 second gripping surface located on the second sidewall below the second fastening strip, said second gripping surface has a second upper surface and a second lower surface.

43. The invention as in claim 42 wherein the second  
20 upper surface includes a first rib.

44. The invention as in claim 43 wherein the second  
upper surface includes a second rib.

45. The invention as in claim 42 wherein said first  
25 upper surface includes a first rib and a second rib, said second upper surface includes third rib and a fourth rib.

46. The invention as in claim 45 wherein the distance  
30 between the first rib and the second rib is equal to the distance between the third rib and the fourth rib.

47. The invention as in claim 45 wherein the distance between the first rib and the second rib is greater than the distance between the third rib and the fourth rib.

5      48. The invention as in claim 41 wherein the length of the first rib is equal to the length of the second rib.

49. The invention as in claim 41 wherein the length of the first rib is greater than the length of the second rib.

10      50. The invention as in claim 41 wherein the first upper surface includes a third rib.

15      51. The invention as in claim 50 wherein the distance between the first rib and the second rib is equal to the distance between the second rib and the third rib.

20      52. The invention as in claim 50 wherein the distance between the first rib and the second rib is greater than the distance between the second rib and the third rib.

53. The invention as in claim 39 wherein the first upper surface includes a plurality of protrusions.

25      54. The invention as in claim 39 wherein the upper surface includes a mesh pattern which has a plurality of ribs and cross-ribs.

30      55. The invention as in claim 39 wherein the upper surface is a knurled pattern.

56. The invention as in claim 38 wherein the width of the gripping surface varies along the length of the sidewall.

57. The invention as in claim 56 wherein the gripping surface has ends and a center, the width of the gripping surface at the ends is wider than the width of the gripping surface at the center.

58. The invention as in claim 38 wherein the first gripping surface has a first segment and a second segment.

59. The invention as in claim 58 wherein the container has a first edge and a second edge which join the first and second sidewalls, the first segment is located near the first edge and the second segment is located near the second edge.

60. The invention as in claim 39 wherein the first gripping surface includes a layer of material added to the first sidewall.

61. The invention as in claim 60 wherein the layer of material includes the first upper surface and the first lower surface.

62. The invention as in claim 60 wherein the layer of material includes the first upper surface and a portion of the sidewall includes the first lower surface.

63. The invention as in claim 39 wherein the first gripping surface is formed by removing material from the first sidewall.

64. The invention as in claim 63 wherein the first lower surface is formed by removing material from the first sidewall.



65. The invention as in claim 64 wherein the first upper surface is formed by removing material from the first sidewall.

5

66. The invention as in claim 63 wherein the material is removed by one of the following processes: cutting or etching.

10

67. The invention as in claim 39 wherein the first gripping surface is formed by manipulating the first sidewall.

68. The invention as in claim 67 wherein the first lower surface is formed by manipulating the first sidewall.

15

69. The invention as in claim 68 wherein the first upper surface is formed by manipulating the first sidewall.

20

70. The invention as in claim 67 wherein the first sidewall is manipulated by an embossing process.

71. A method of using a container comprising:  
providing a first sidewall and a second sidewall, said  
25 first sidewall includes a first fastening strip, said second  
sidewall includes a second fastening strip,  
providing a slider adapted to be slidably disposed on  
said fastening strips and facilitating the occlusion of said  
fastening strips when moved towards a first end thereof and  
30 facilitating the deocclusion of said fastening strips when  
moved towards a second end thereof;

providing a first gripping surface located on the first  
sidewall below the first fastening strip, said container  
having a longitudinal X axis and a transverse Y axis, said

transverse Y axis being perpendicular to said longitudinal X axis, said container having a vertical Z axis, said vertical Z axis being perpendicular to said longitudinal X axis, said vertical Z axis being perpendicular to said transverse Y

5 axis;

engaging the gripping surface with a first hand;

engaging the slider with a second hand;

moving the slider along the fastening strips with the second hand while engaging the gripping surface with the first hand.

10

72. The invention as in claim 71 wherein said first gripping surface has a first upper surface and a first lower surface.

15

73. The invention as in claim 72 wherein the first upper surface includes a first rib.

74. The invention as in claim 73 wherein the first upper surface includes a second rib.

20

75. The invention as in claim 72 further comprising a second gripping surface located on the second sidewall below the second fastening strip, said second gripping surface has a second upper surface and a second lower surface.

25

76. The invention as in claim 75 wherein the second upper surface includes a first rib.

77. The invention as in claim 76 wherein the second upper surface includes a second rib.

30

78. The invention as in claim 75 wherein said first upper surface includes a first rib and a second rib, said second upper surface includes third rib and a fourth rib.

5        79. The invention as in claim 78 wherein the distance between the first rib and the second rib is equal to the distance between the third rib and the fourth rib.

10       80. The invention as in claim 78 wherein the distance between the first rib and the second rib is greater than the distance between the third rib and the fourth rib.

15       81. The invention as in claim 74 wherein the length of the first rib is equal to the length of the second rib.

82. The invention as in claim 74 wherein the length of the first rib is greater than the length of the second rib.

20       83. The invention as in claim 74 wherein the first upper surface includes a third rib.

25       84. The invention as in claim 83 wherein the distance between the first rib and the second rib is equal to the distance between the second rib and the third rib.

85. The invention as in claim 83 wherein the distance between the first rib and the second rib is greater than the distance between the second rib and the third rib.

30       86. The invention as in claim 72 wherein the first upper surface includes a plurality of protrusions.

87. The invention as in claim 72 wherein the upper surface includes a mesh pattern which has a plurality of ribs and cross-ribs.

5        88. The invention as in claim 72 wherein the upper surface is a knurled pattern.

89. The invention as in claim 71 wherein the width of the gripping surface varies along the length of the  
10        sidewall.

90. The invention as in claim 89 wherein the gripping surface has ends and a center, the width of the gripping surface at the ends is wider than the width of the gripping  
15        surface at the center.

91. The invention as in claim 71 wherein the first gripping surface has a first segment and a second segment.

20        92. The invention as in claim 91 wherein the container has a first edge and a second edge which join the first and second sidewalls, the first segment is located near the first edge and the second segment is located near the second edge.

25        93. The invention as in claim 72 wherein the first gripping surface includes a layer of material added to the first sidewall.

30        94. The invention as in claim 93 wherein the layer of material includes the first upper surface and the first lower surface.

95. The invention as in claim 93 wherein the layer of material includes the first upper surface and a portion of the sidewall includes the first lower surface.

5        96. The invention as in claim 72 wherein the first gripping surface is formed by removing material from the first sidewall.

10       97. The invention as in claim 96 wherein the first lower surface is formed by removing material from the first sidewall.

15       98. The invention as in claim 97 wherein the first upper surface is formed by removing material from the first sidewall.

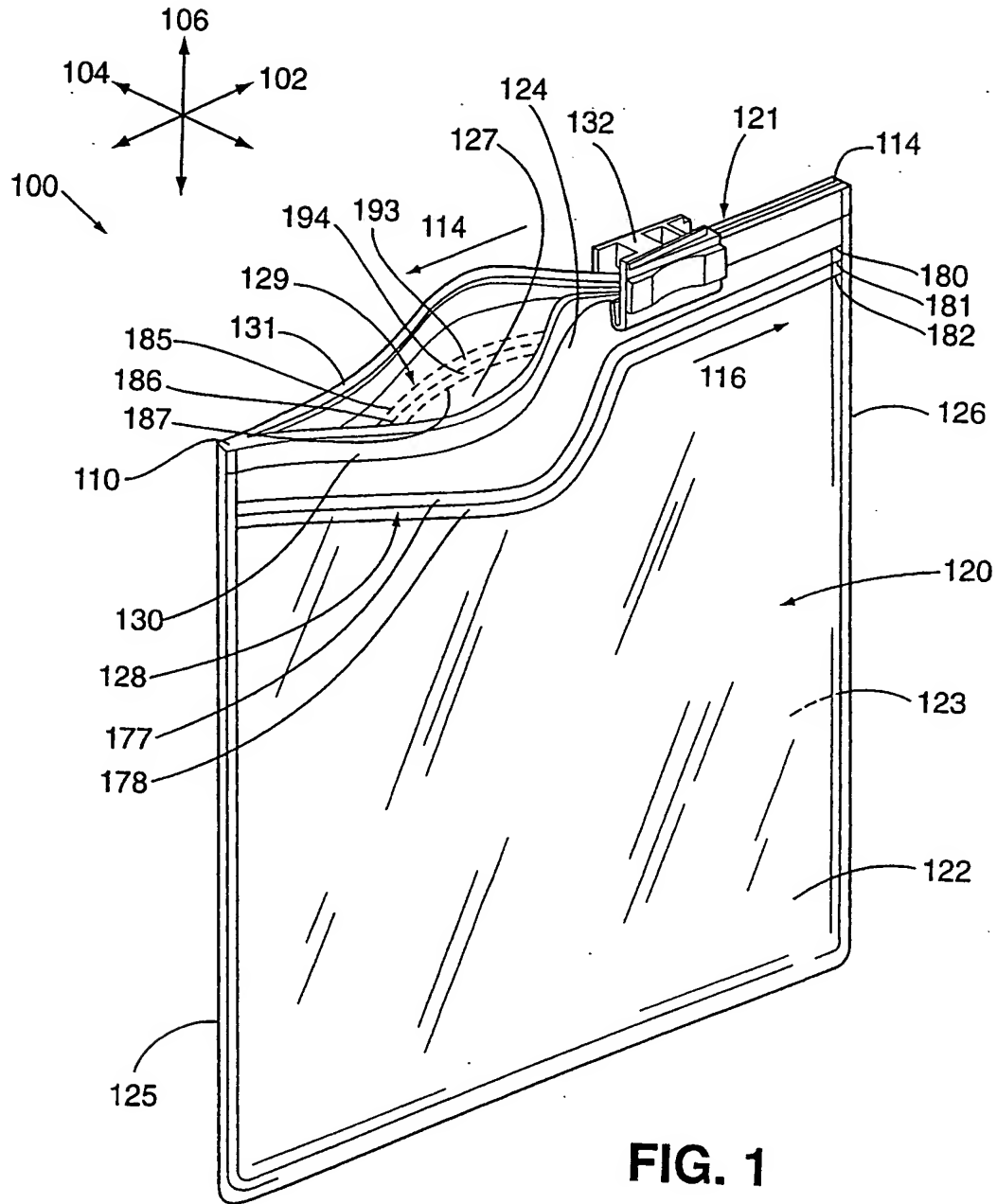
20       99. The invention as in claim 96 wherein the material is removed by one of the following processes: cutting or etching.

100. The invention as in claim 72 wherein the first gripping surface is formed by manipulating the first sidewall.

25       101. The invention as in claim 100 wherein the first lower surface is formed by manipulating the first sidewall.

102. The invention as in claim 101 wherein the first upper surface is formed by manipulating the first sidewall.

30       103. The invention as in claim 100 wherein the first sidewall is manipulated by an embossing process.



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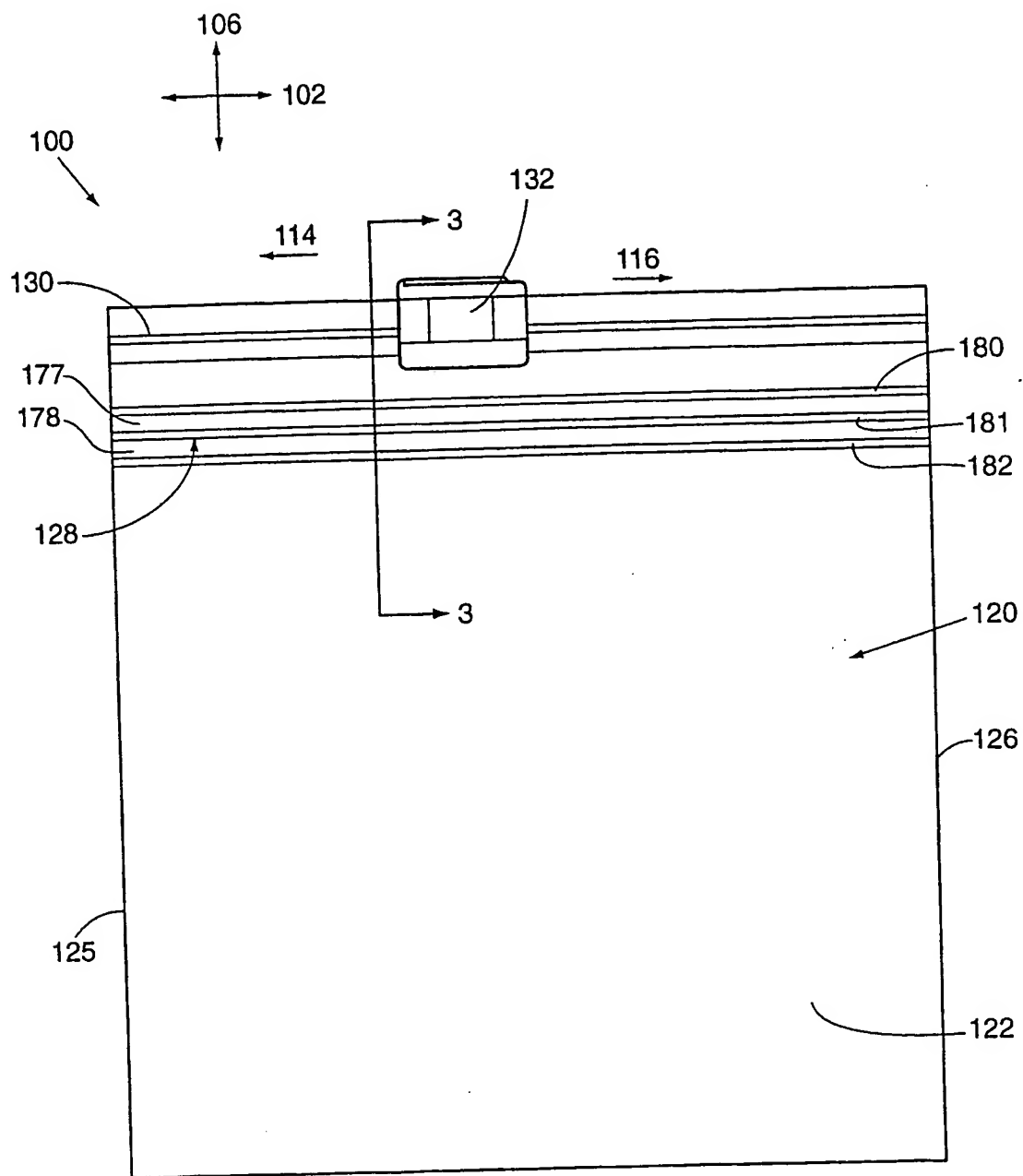


FIG. 2

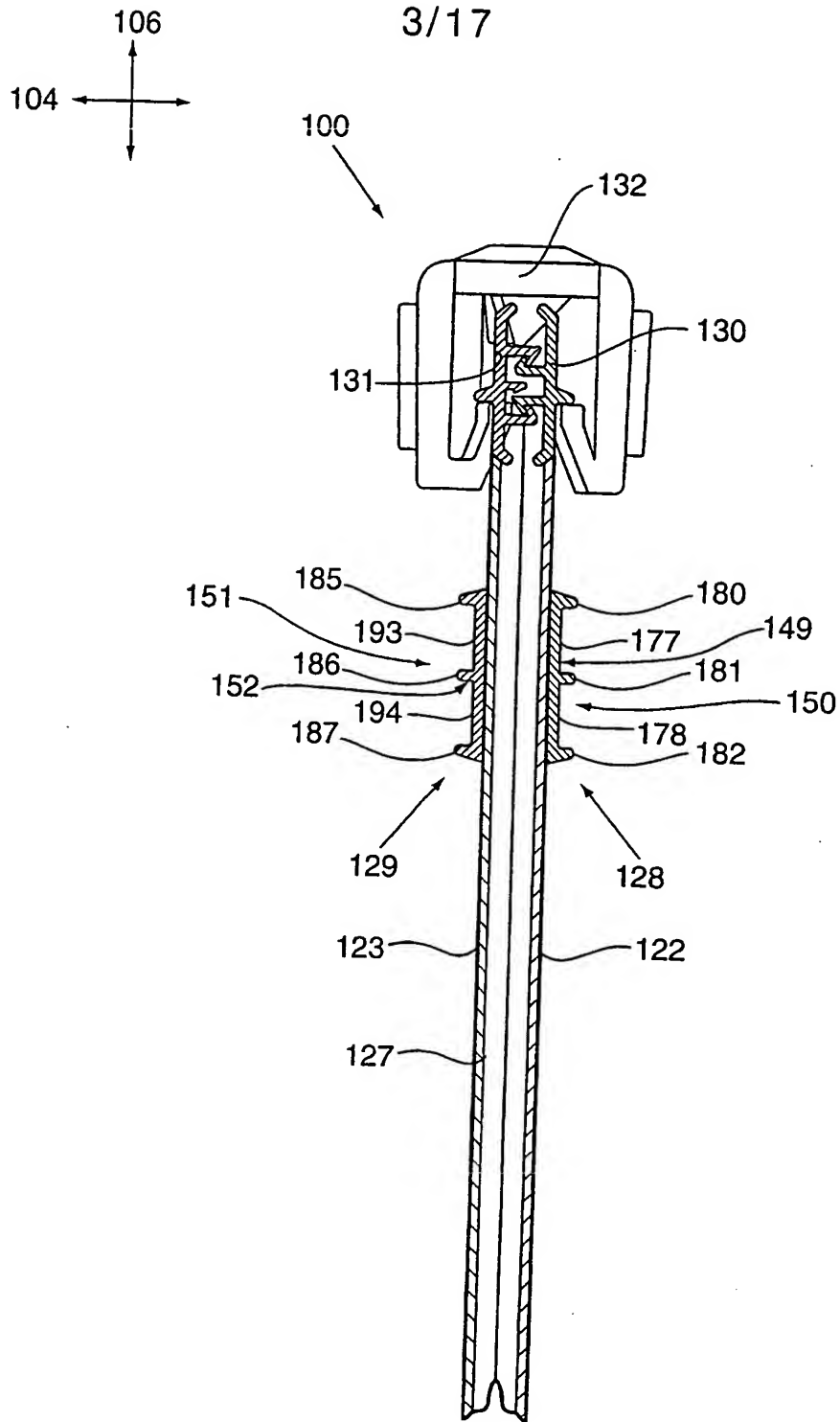


FIG. 3



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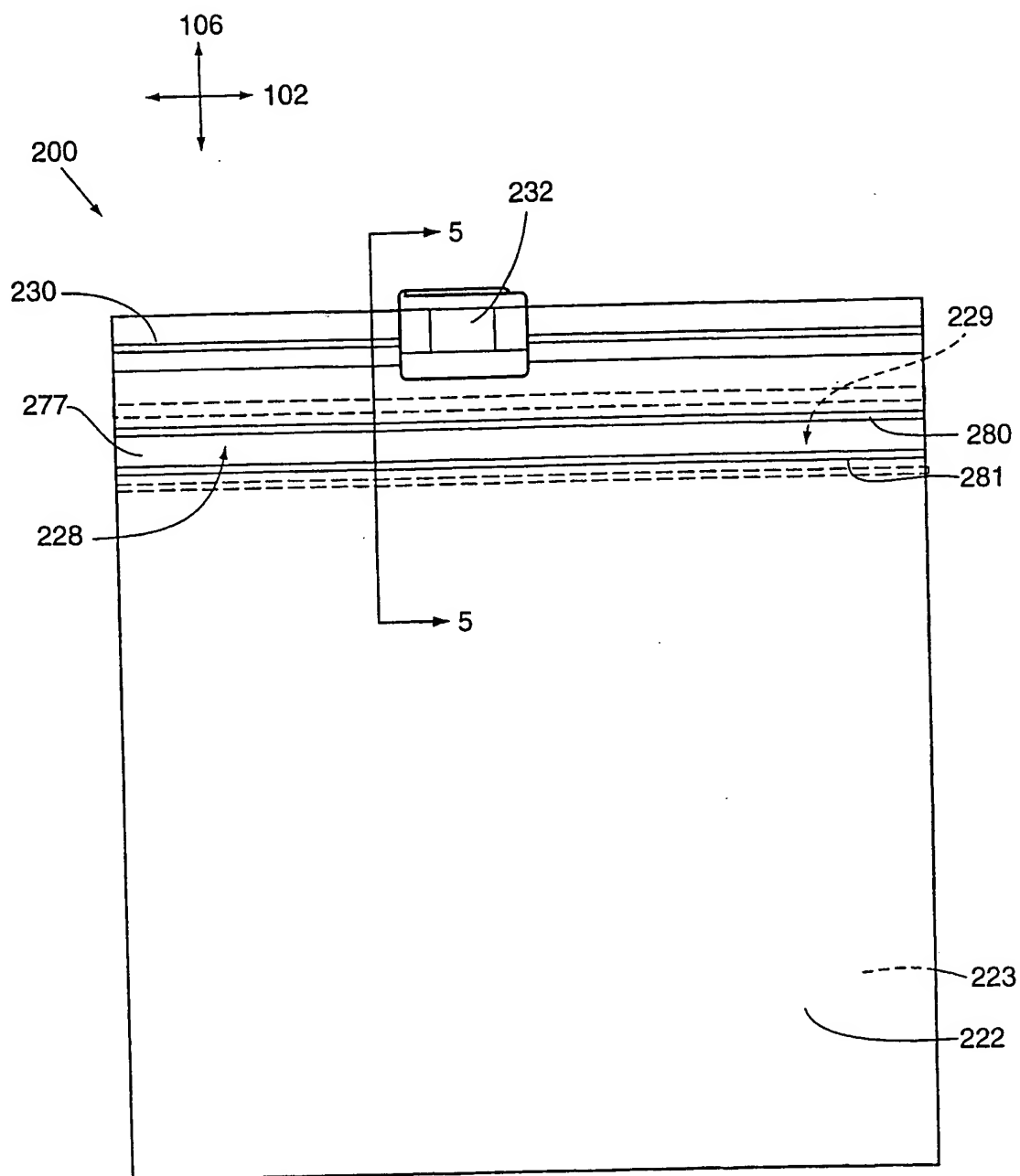


FIG. 4

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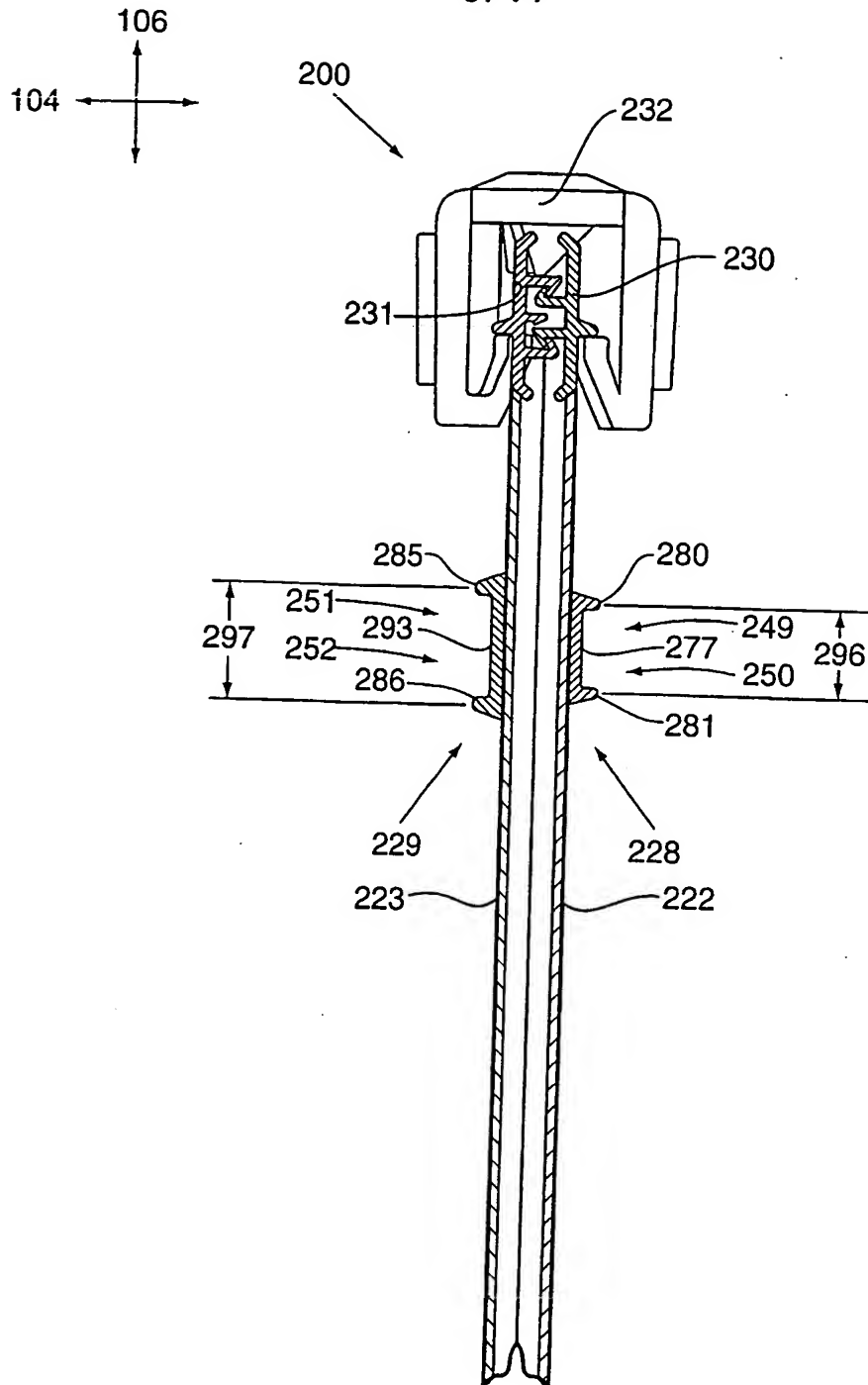


FIG. 5

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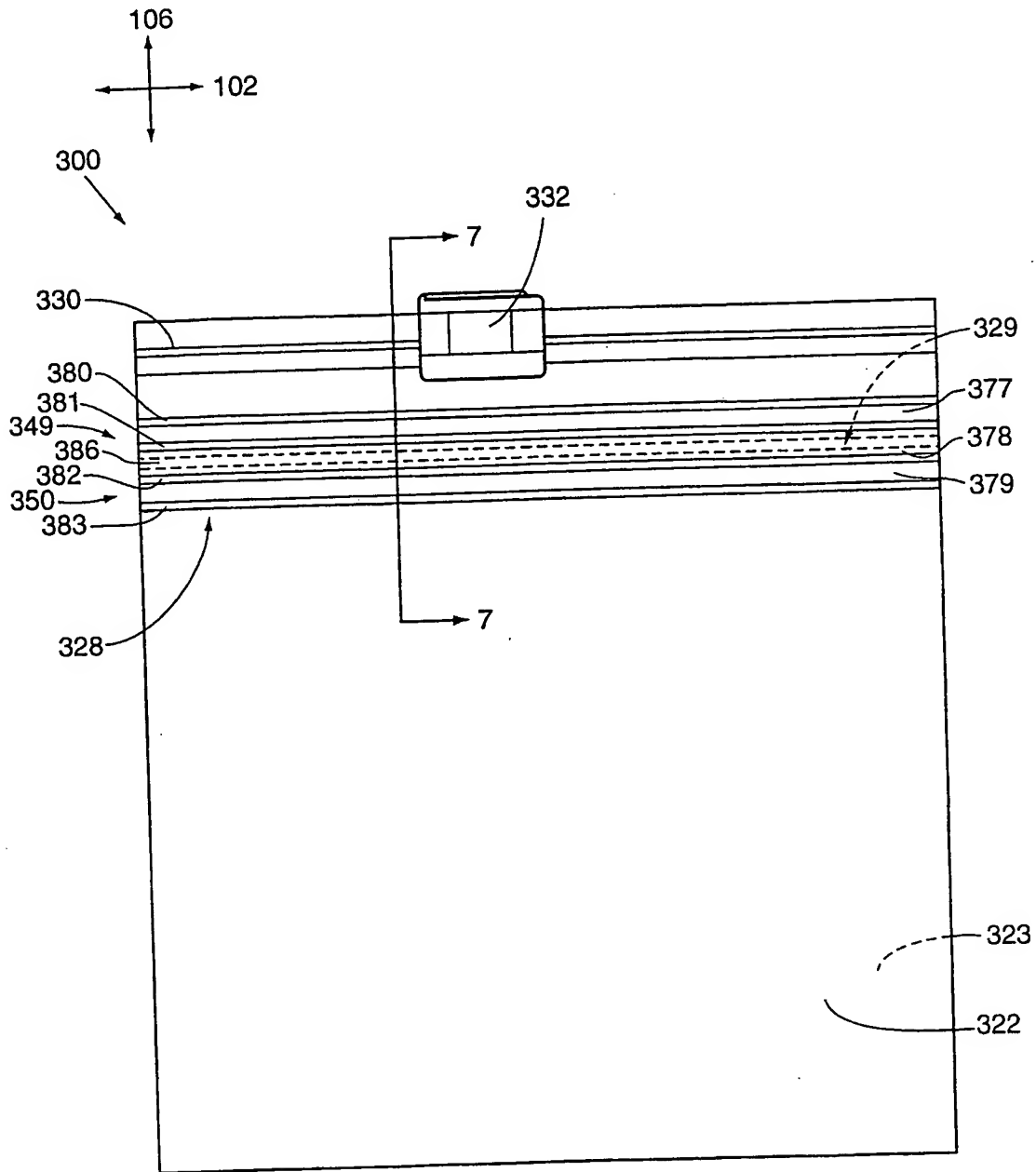


FIG. 6

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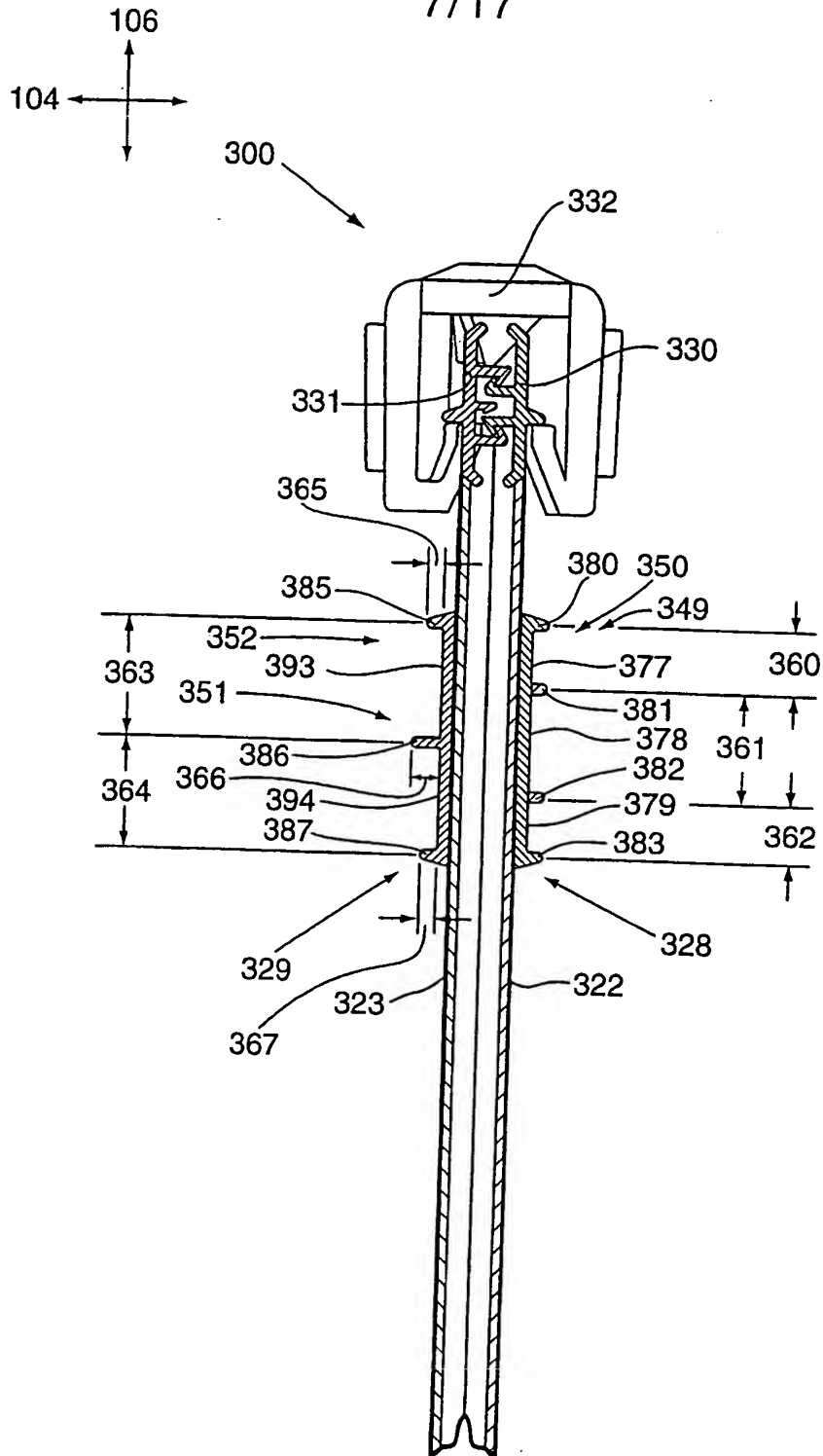


FIG. 7

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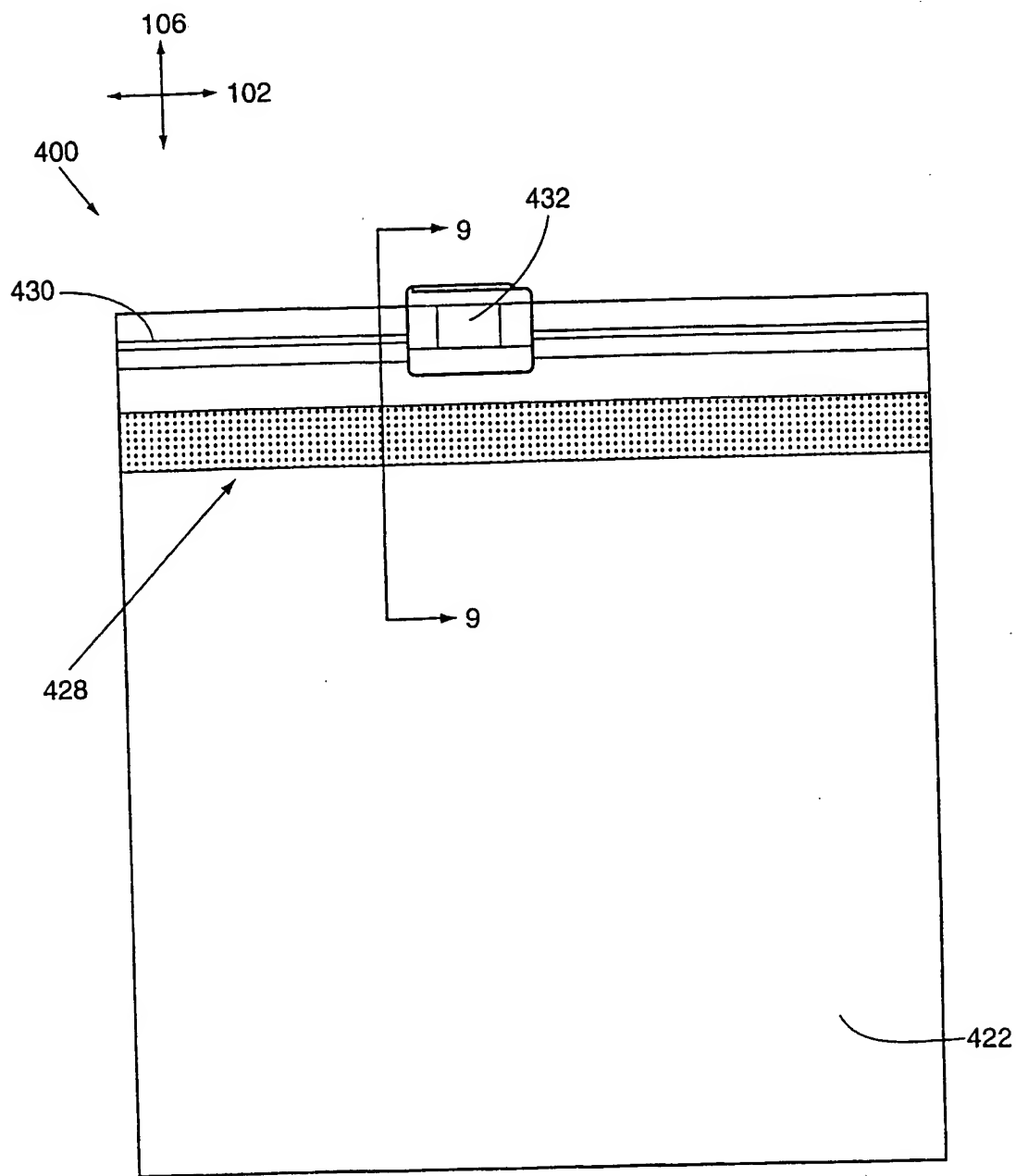


FIG. 8

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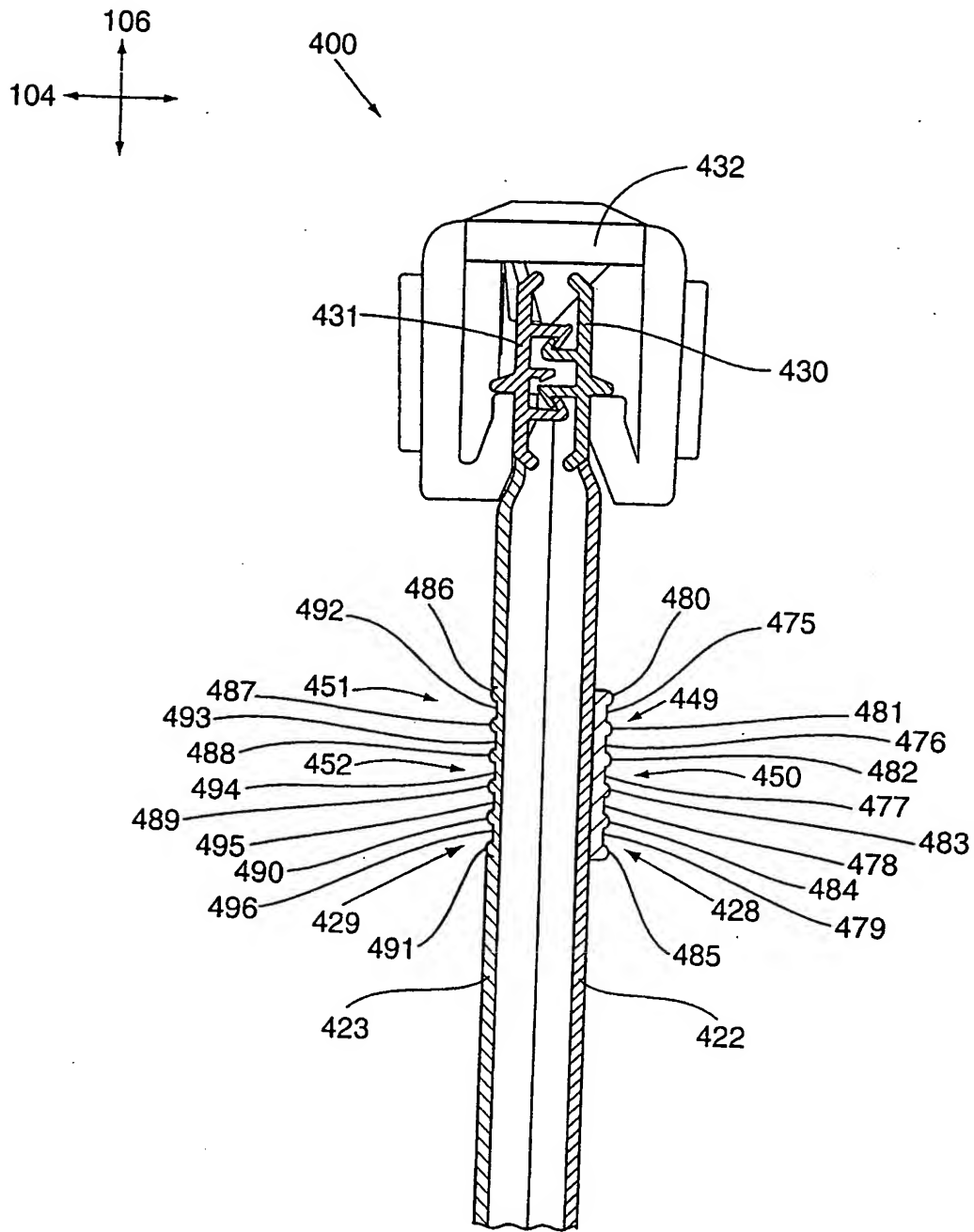


FIG. 9

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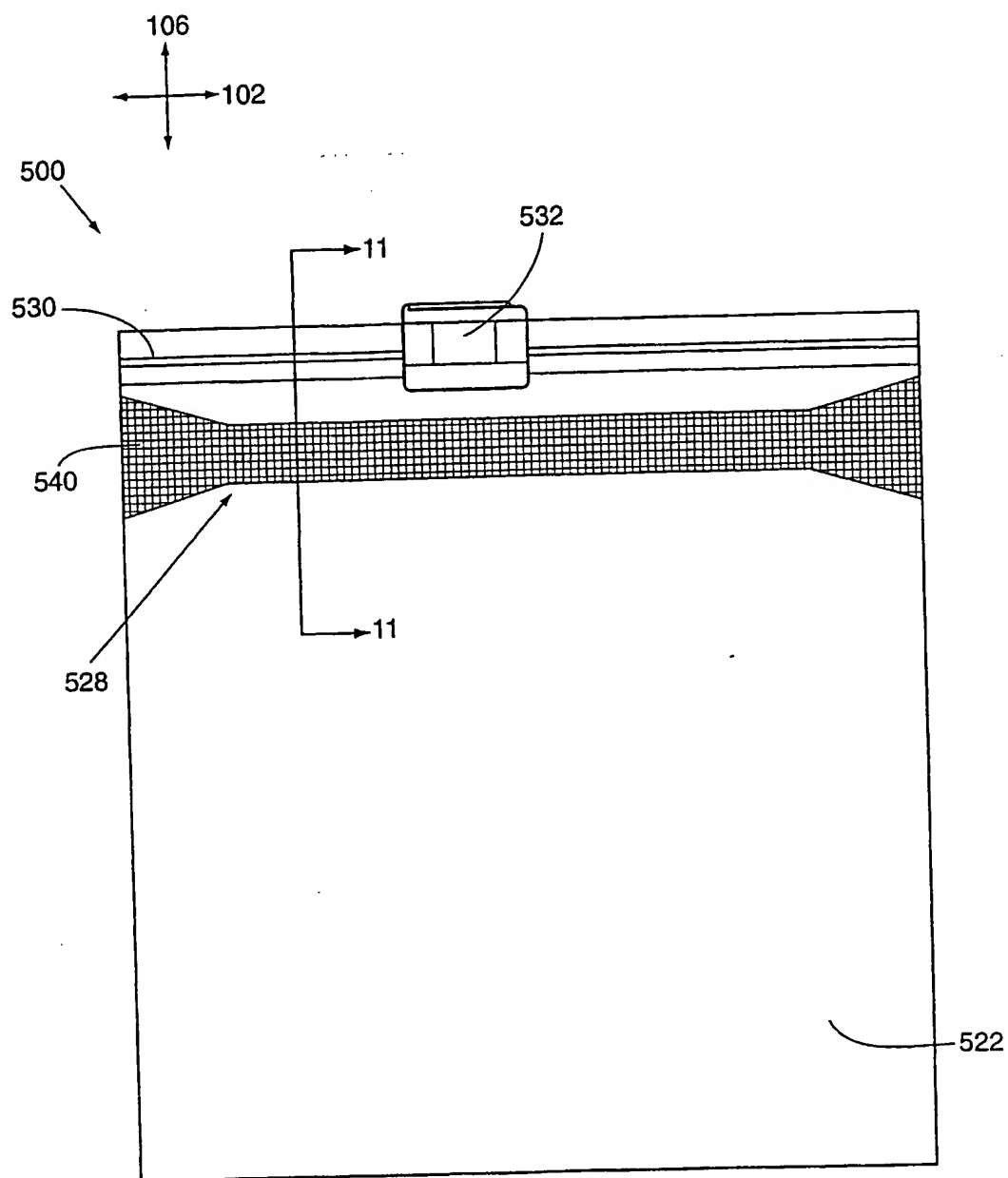


FIG. 10

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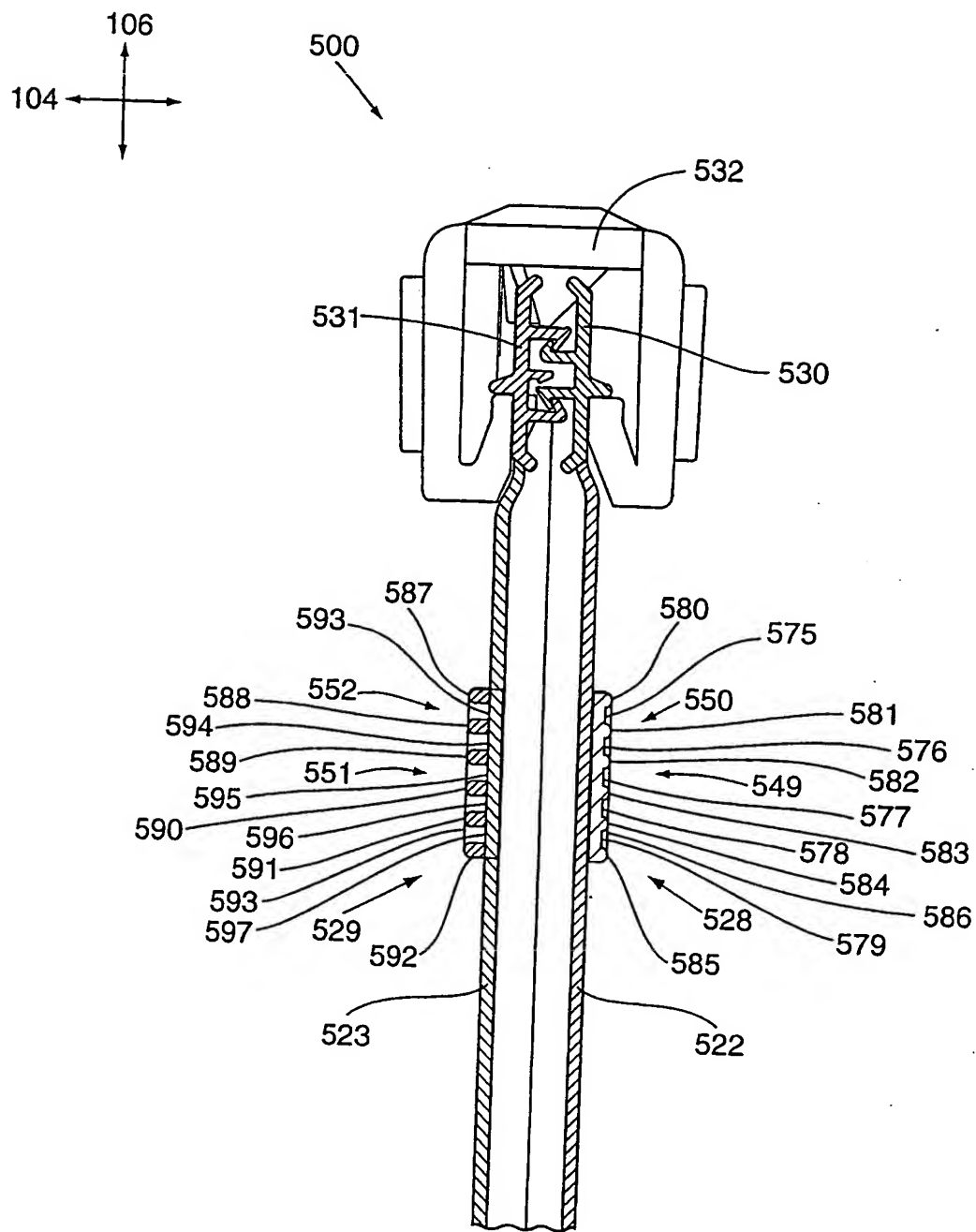


FIG. 11



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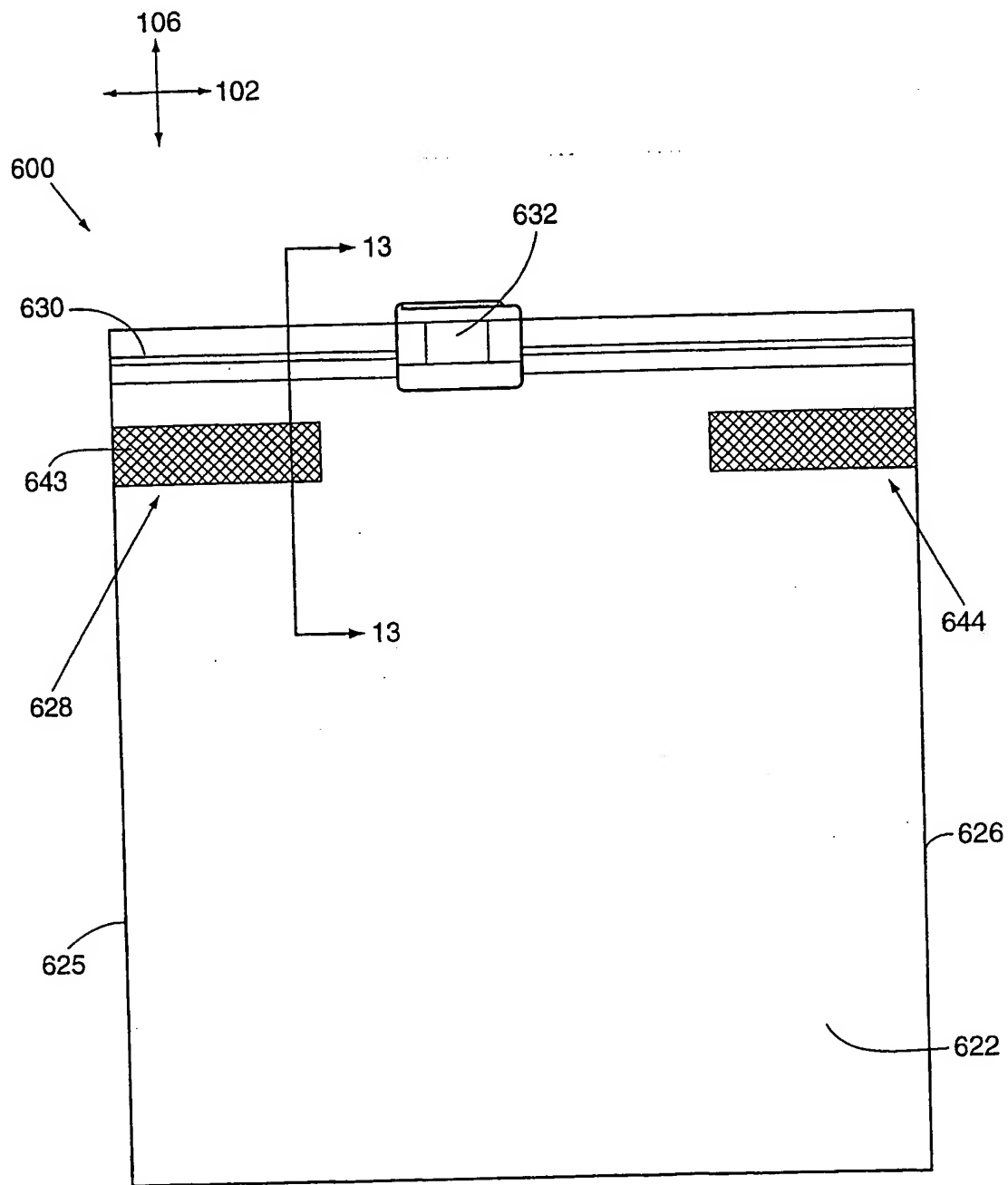


FIG. 12

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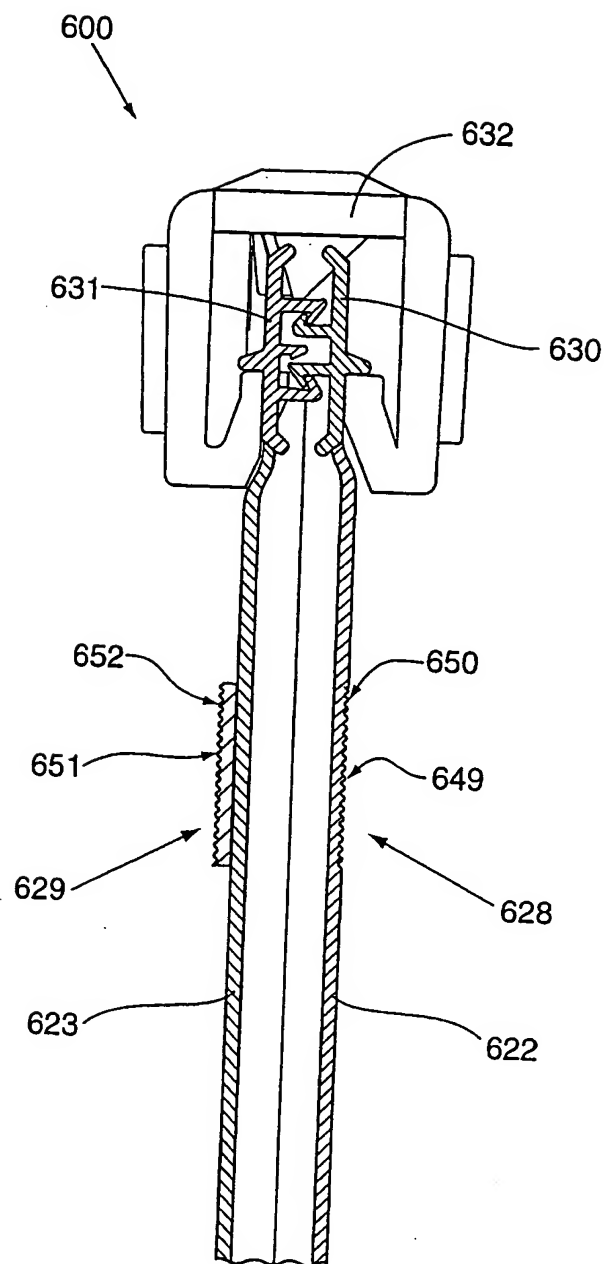
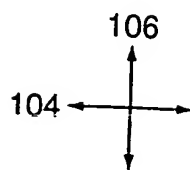


FIG. 13

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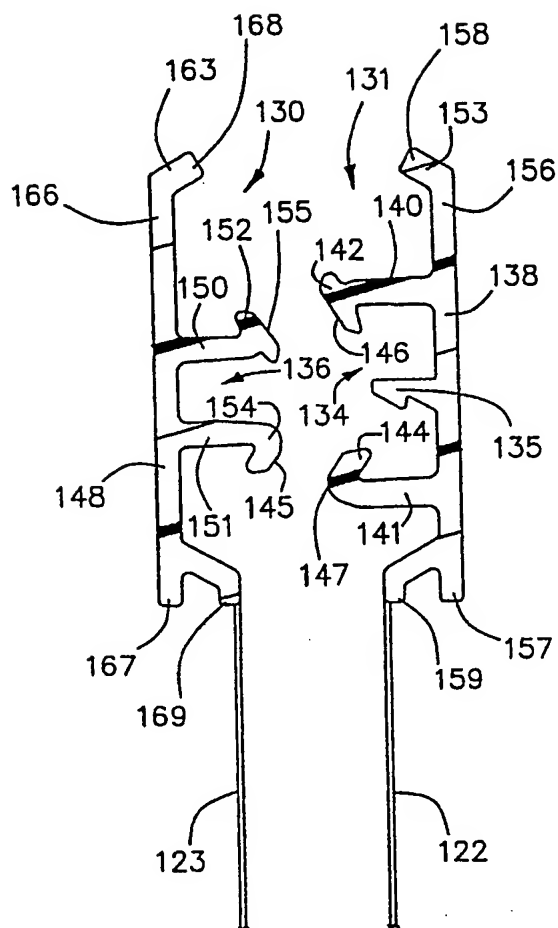


FIG. 14

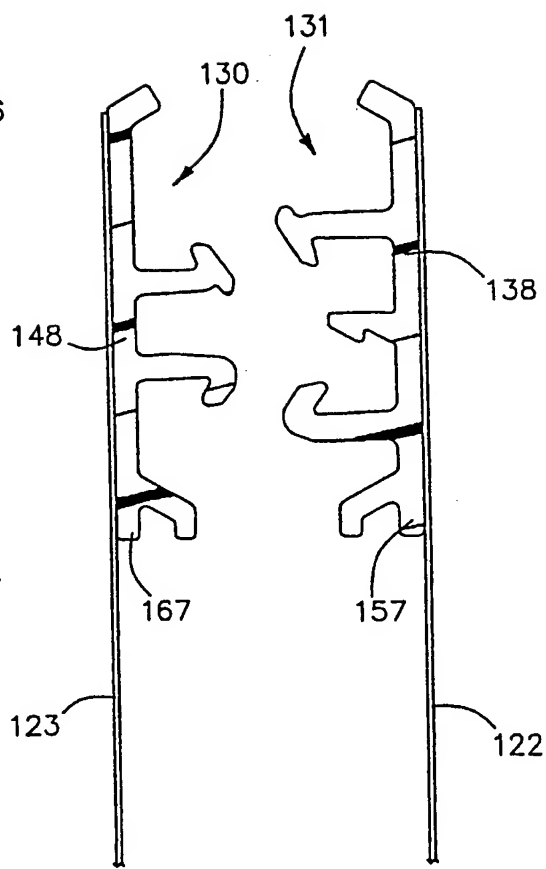


FIG. 15

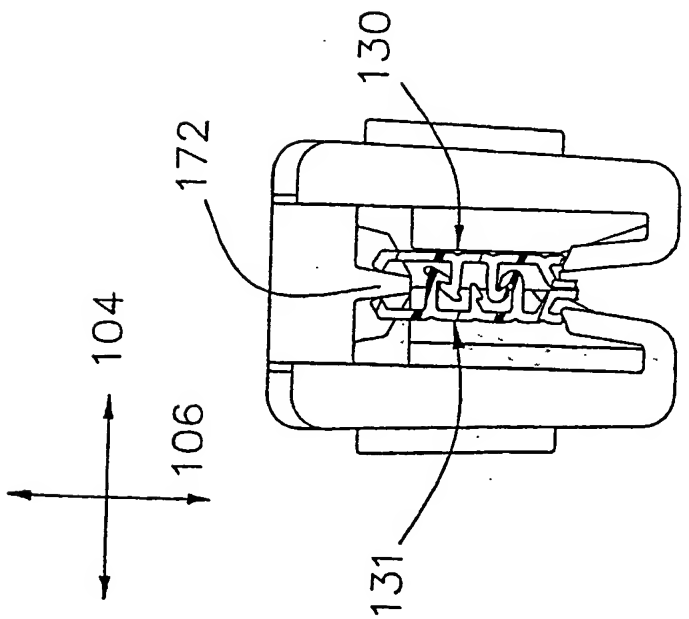


FIG. 16

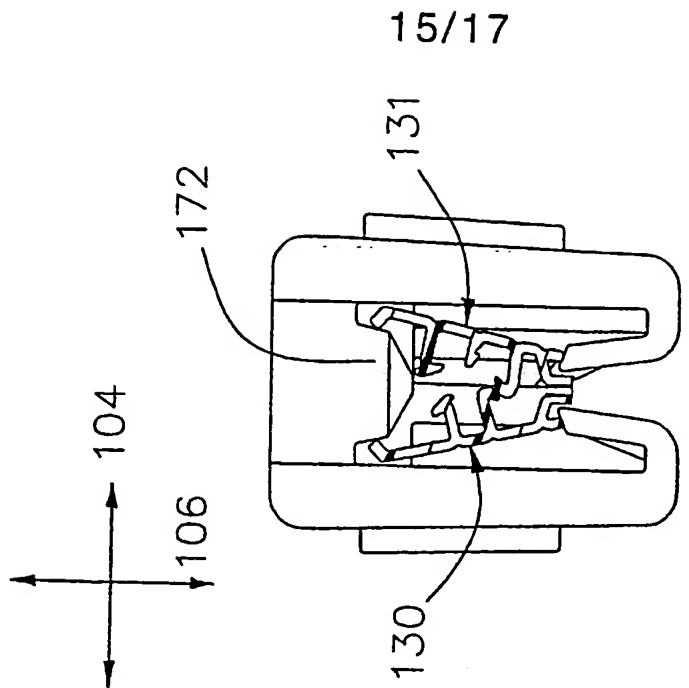
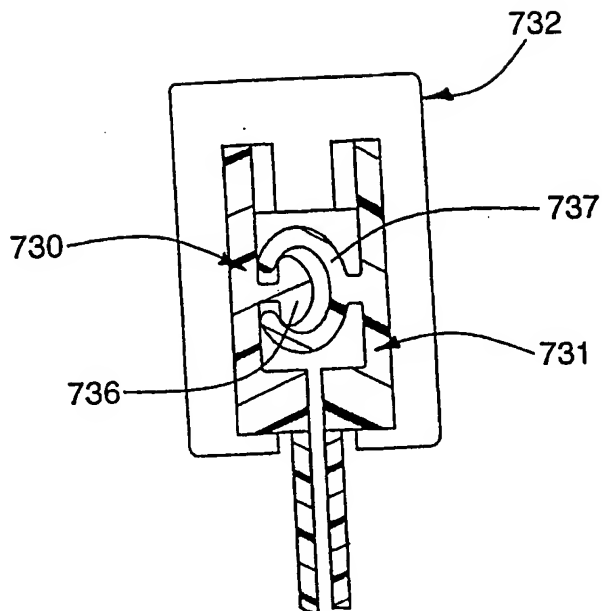
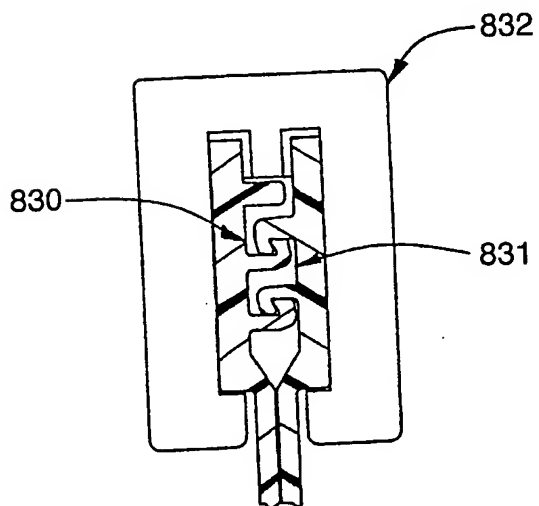


FIG. 17

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**FIG. 18**



**FIG. 19**

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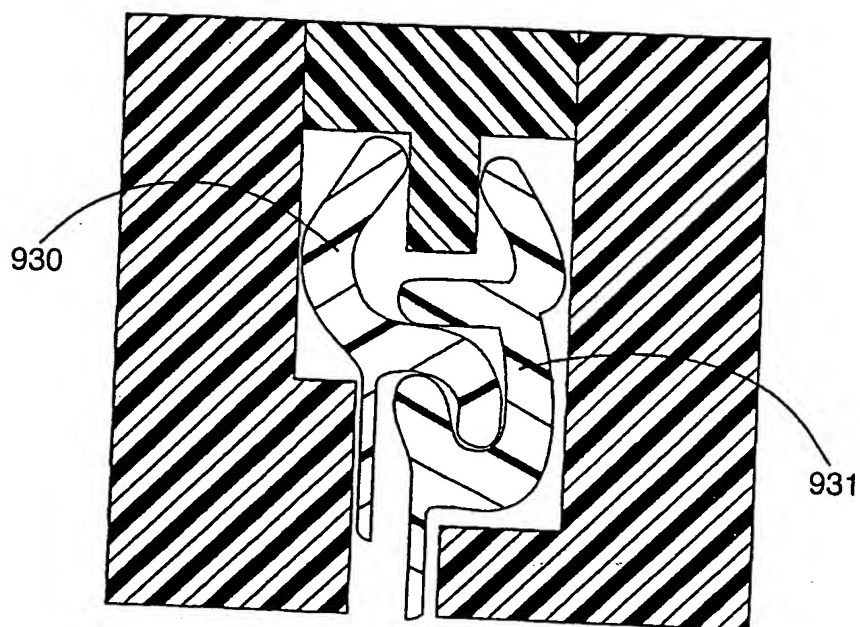


FIG. 20

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/13255

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :B65D 33/00, 33/24

US CL :383/64

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 383/35, 64

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,442,837 A (MORGAN) 22 August 1995, see col. 3, lines 55-58.	1, 2, 5, 19, 21, 22, 30-32, 38, 39, 42, 56-59, 67-69, 71, 72, 75, 89-92, 100-102
A	US 2,197,113 A (PIAZZE) 16 April 1940.	
A	US 3,393,861 A (CLAYTON ET AL.) 23 July 1968.	
A	US 3,857,144 A (BUSTIN) 31 December 1974.	
A	US 5,209,574 A (TILMAN) 11 May 1993,	
A	US 5,482,375 A (RICHARDSON ET AL.) 09 January 1996.	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

28 JULY 1999

Date of mailing of the international search report

23 AUG 1999

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Paralegal Specialist  
Technology Center 3700

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/13255

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,527,112 A (DAIS ET AL.) 18 June 1996.	
A	US 5,544,752 A (COX) 13 August 1996.	
A	US 5,564,834 A (PORCHIA ET AL.) 15 October 1996.	
A	US 5,839,831 A (MAZZOCCHI) 24 November 1998.	
A	GB 2,271,756 A (PENNEY) 27 April 1994.	